

May 18, 1965

O. J. POUPITCH

3,184,148

CARRIER PACKAGE AND METHOD OF ASSEMBLY

Original Filed Feb. 15, 1960

9 Sheets-Sheet 1

Fig. 1

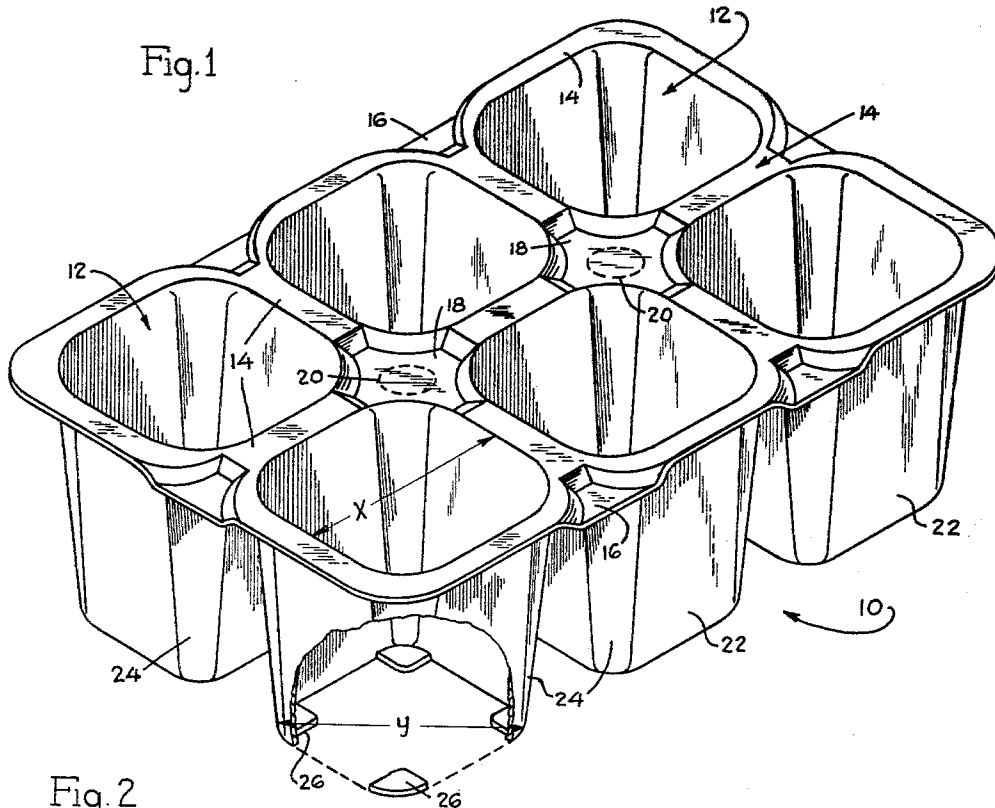
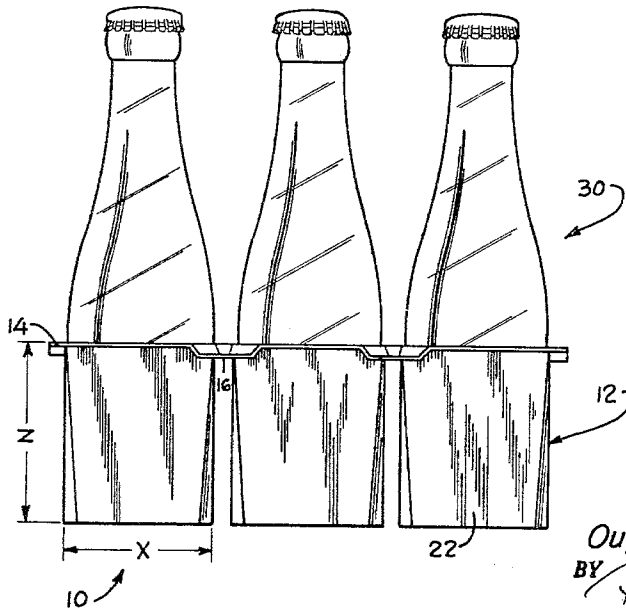


Fig. 2



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Fig. 3

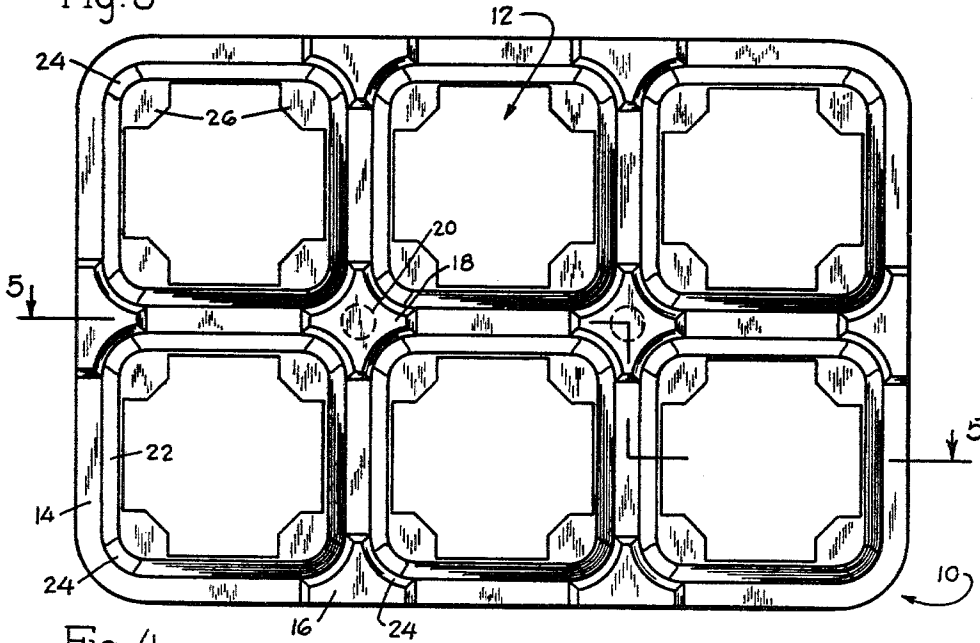
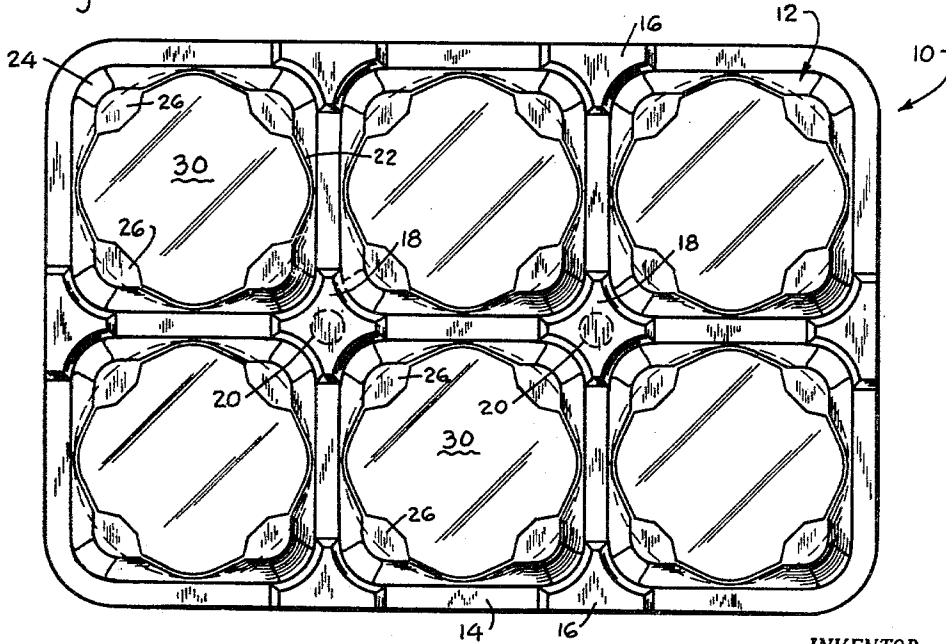


Fig. 4



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Fig. 5

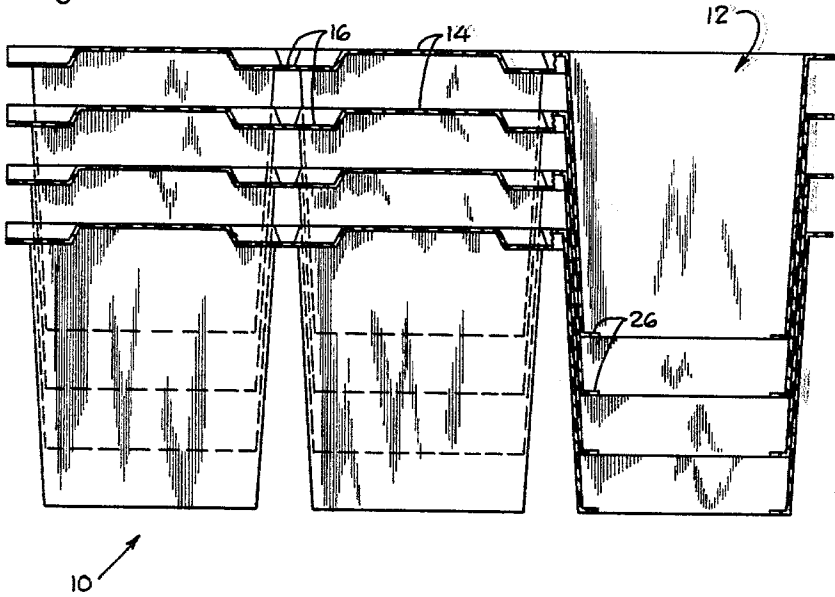


Fig. 6a

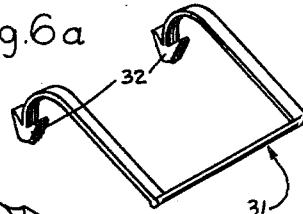
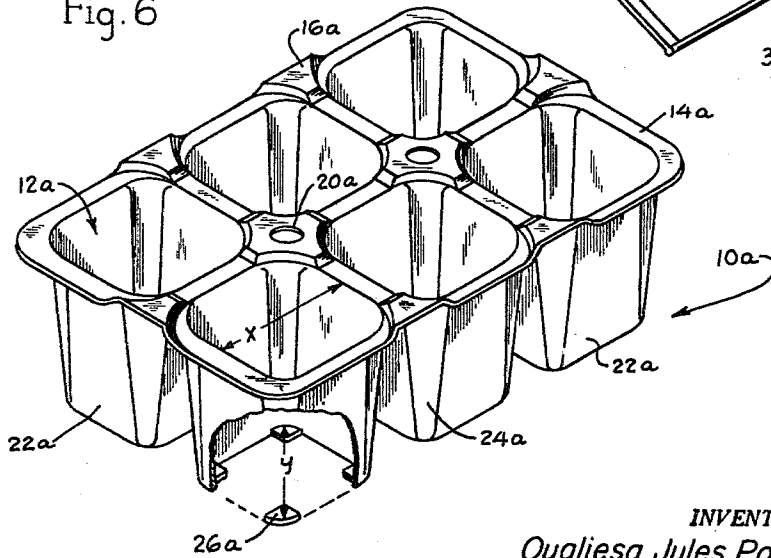


Fig. 6



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Fig. 7

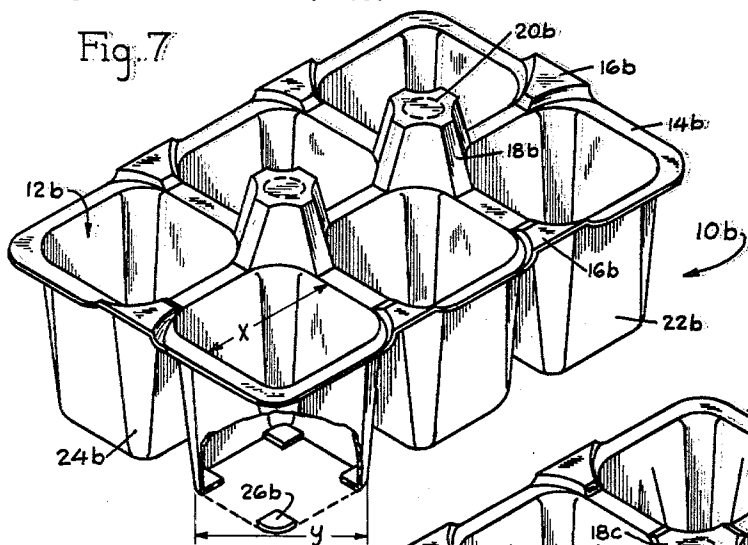


Fig. 8

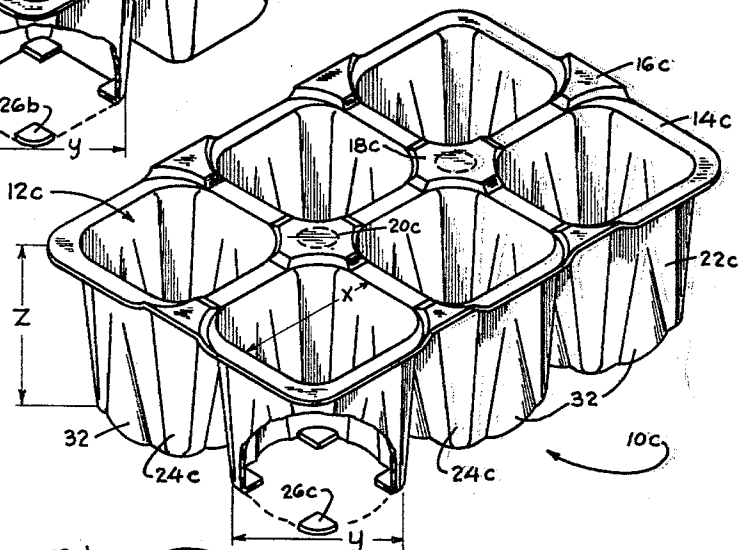
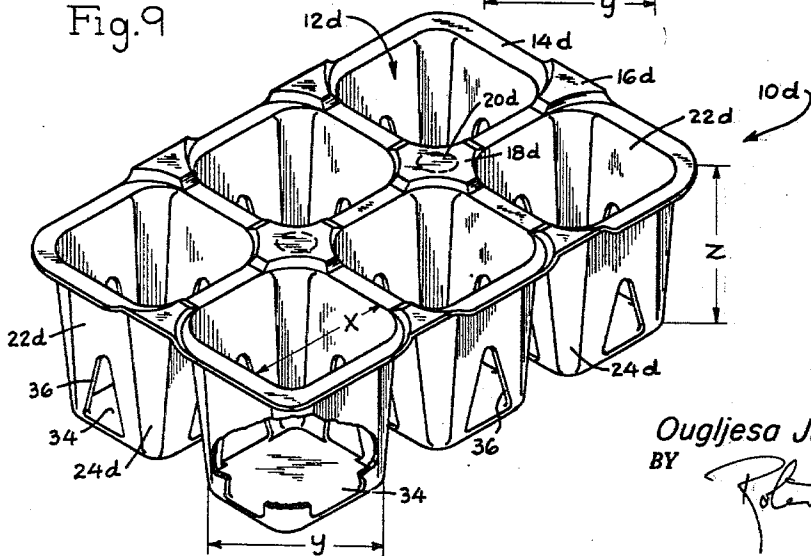


Fig. 9



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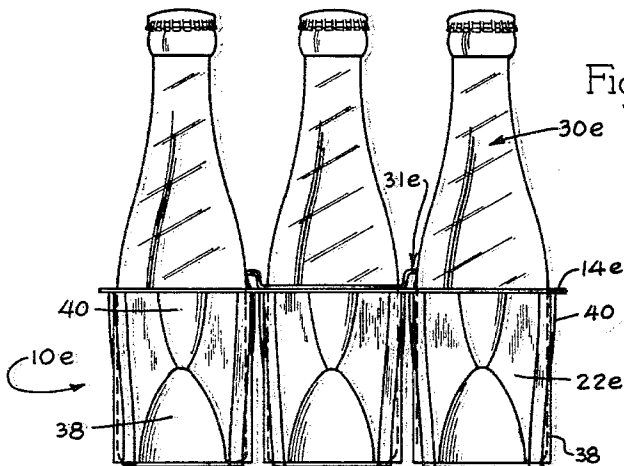
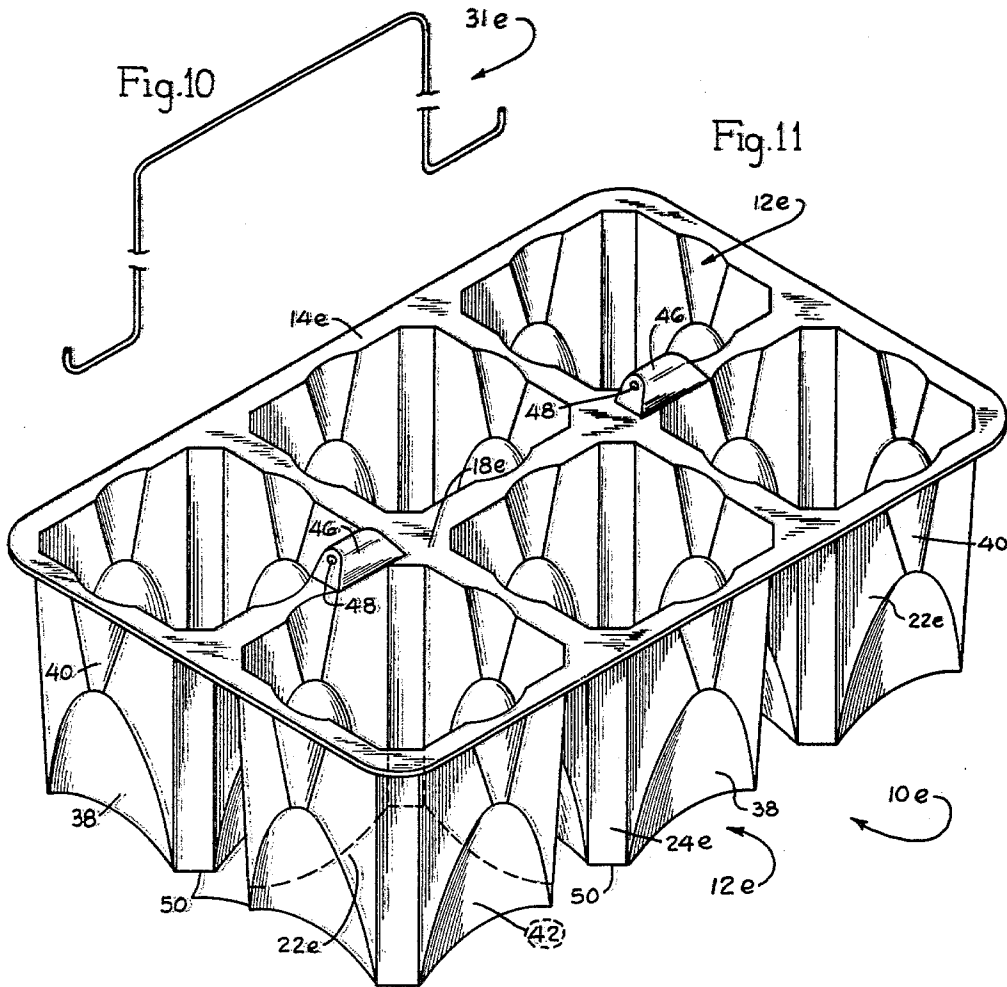
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Fig.13

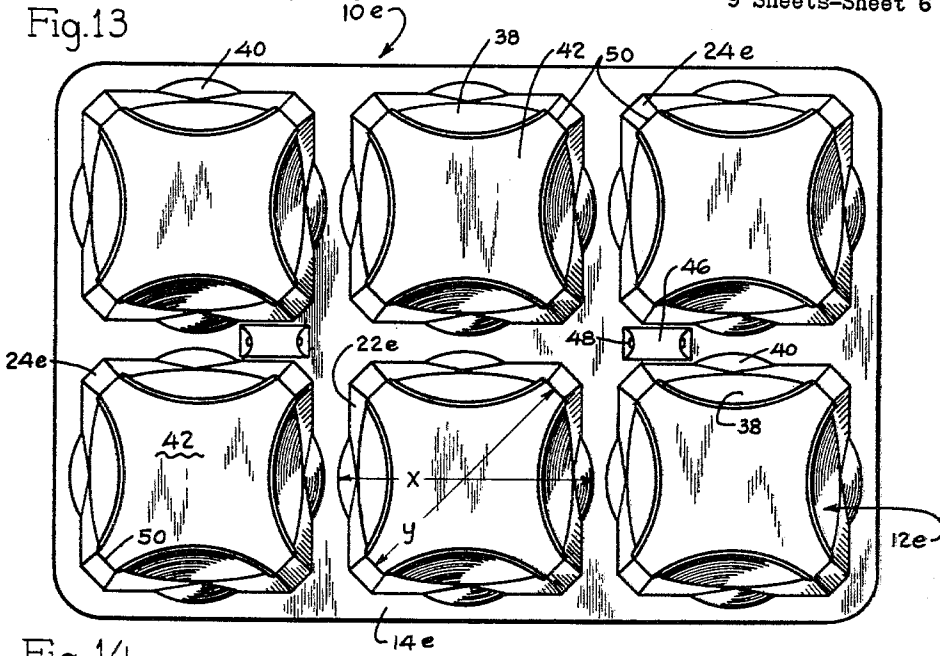
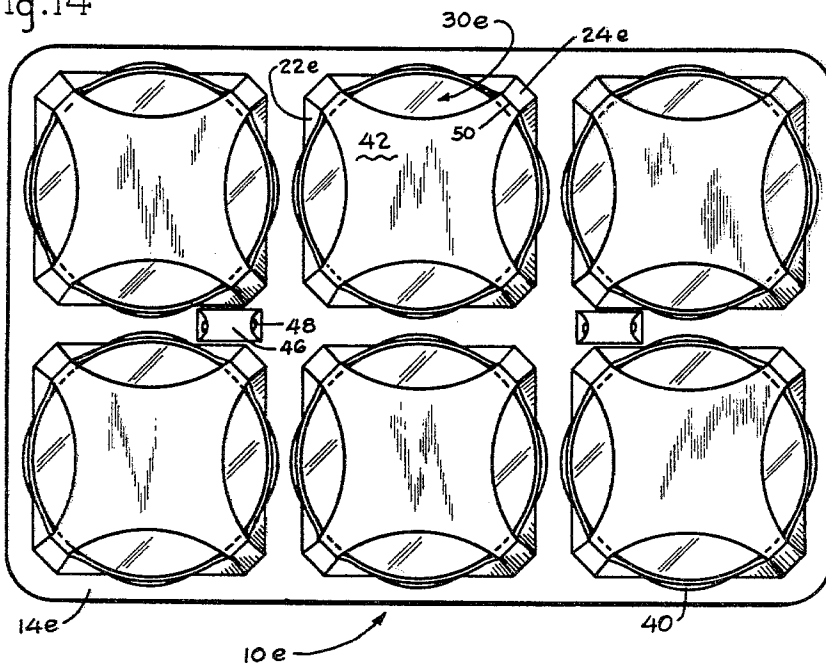


Fig.14



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Fig.15

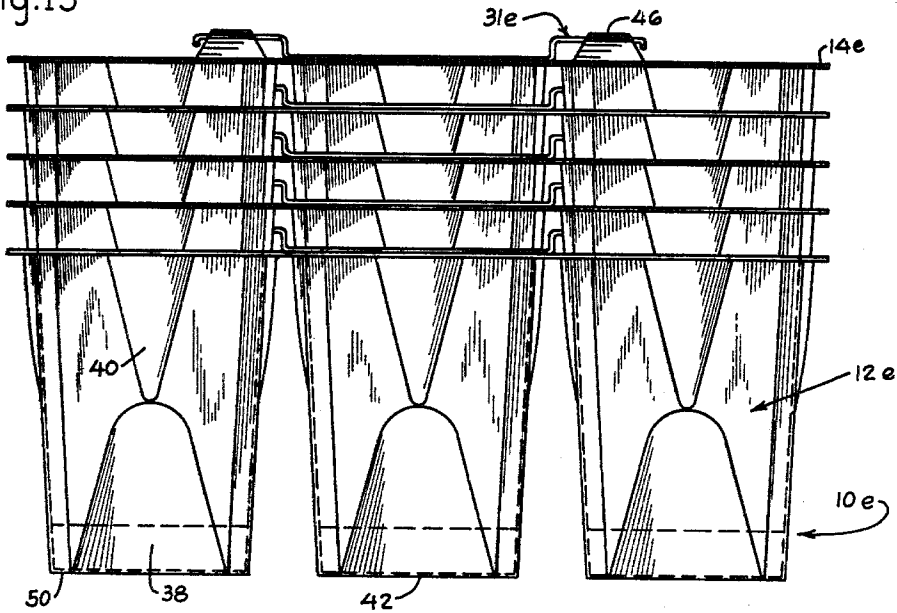
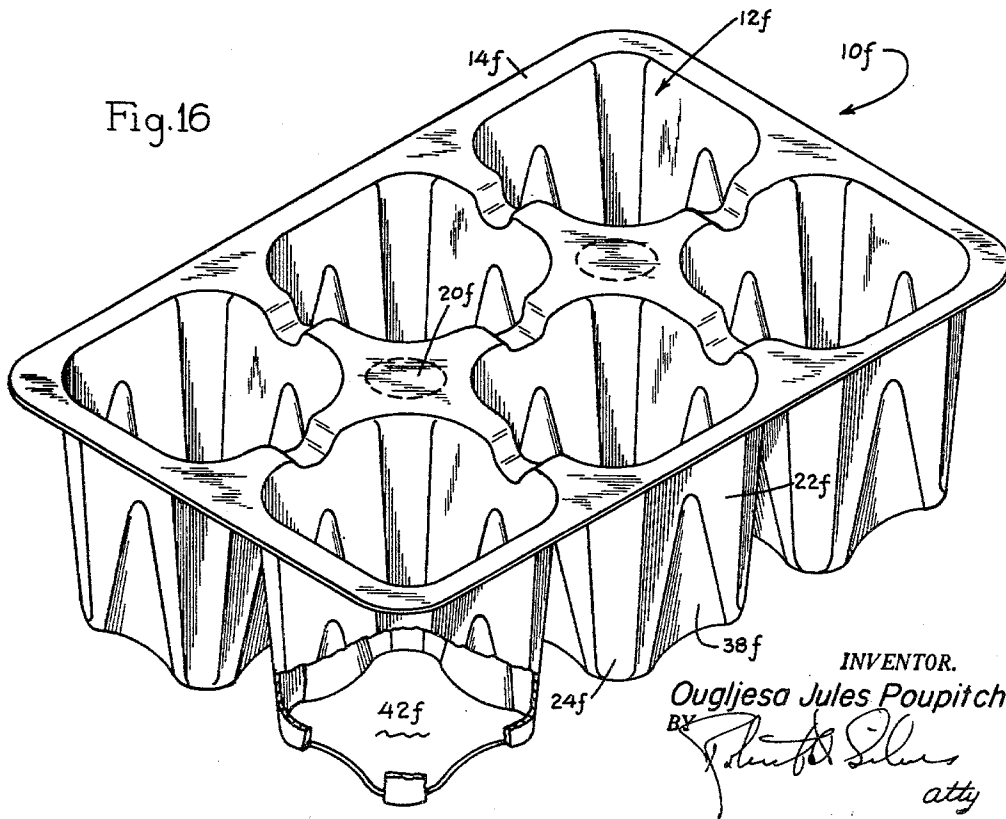


Fig.16



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Fig. 17

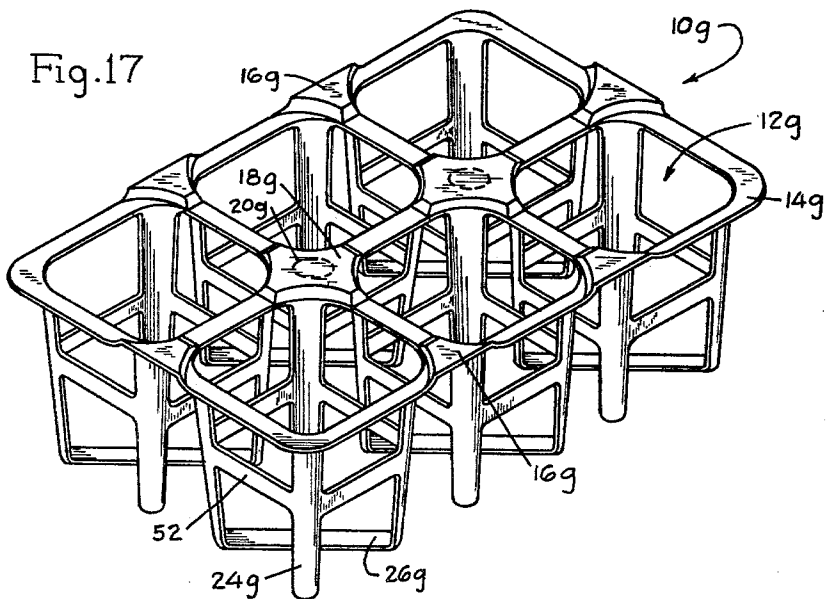
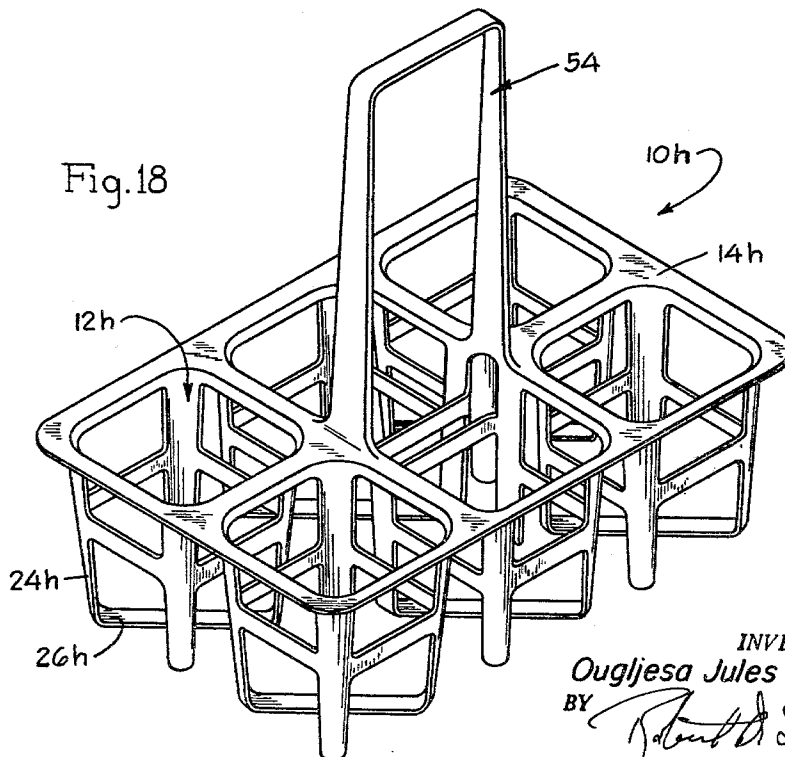


Fig. 18



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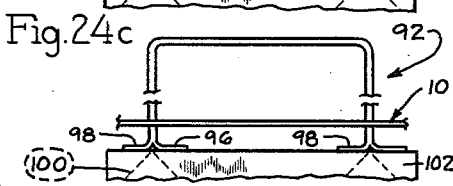
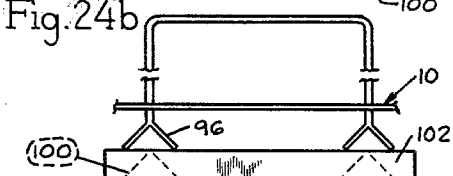
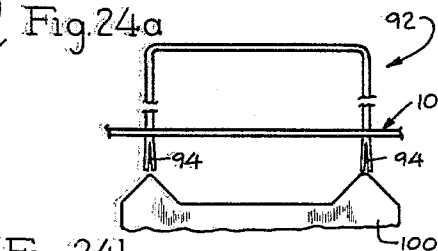
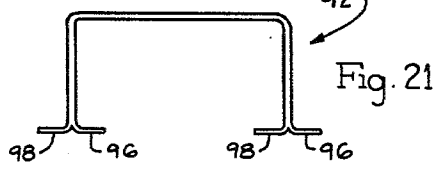
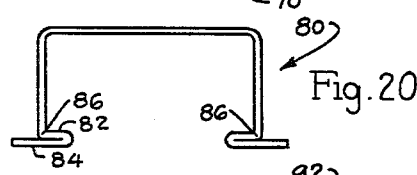
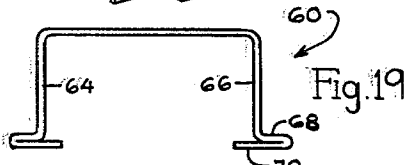
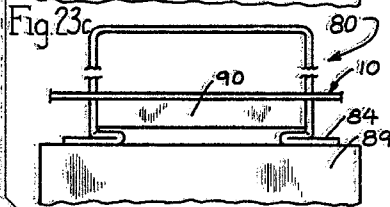
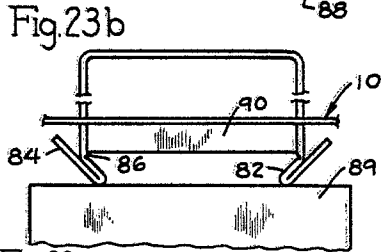
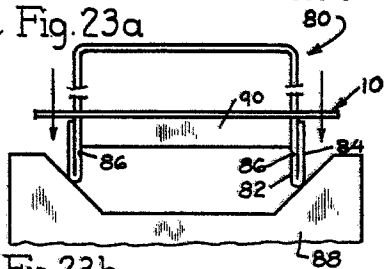
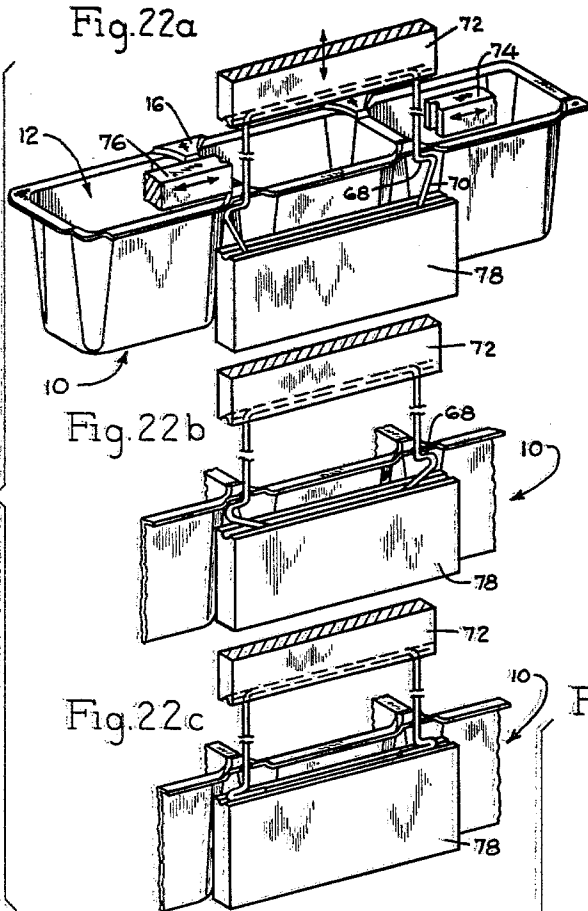
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**CARRIER PACKAGE AND METHOD
 OF ASSEMBLY**

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Original application Feb. 15, 1960, Ser. No. 8,776, now Patent No. 3,115,266. Divided and this application Sept. 5, 1963, Ser. No. 306,765

4 Claims. (Cl. 229-52)

This is a division of application Serial No. 8,776, filed February 15, 1960, entitled Carrier for Containers, now Patent No. 3,115,266. This invention relates in general to a carrier package and method of assembly, and more particularly relates to a handle means for a nestable expandable plastic container carriers and to the method of assembling said handle and carrier to each other.

Conventional packaging devices for bottles such as six-packs for soft drinks are generally manufactured from cardboard and held together with glue. These conventional bottle carriers have certain inherent deficiencies in that they are deleteriously affected by high humidity, are not well adapted to withstand the rigors of their conventional use, cannot be recleaned after use and return by the consumer, and present severe space problems when being shipped from the manufacturer to the bottling or packaging point both during the actual initial shipping and during the warehousing prior to the actual packaging. In my prior patent aforementioned, I have disclosed and claimed a container carrier which overcomes the above noted deficiencies. The present invention is concerned with a handle for such container carriers, and to the method of assembling the handle thereto.

It is an object of this invention to provide a novel handle for a container carrier which is re-usable, sturdy, economical and simple in construction.

A further object of the present invention is to provide a handle for a container carrier which may be quickly and easily assembled thereto, and which thereafter prevents inadvertent removal of the handle therefrom.

A further object of the present invention is to provide a separate insertable type handle for a container carrier and having means to prevent retrograde movement thereof relative to apertures in the web portion of the container carrier.

Still another object of the present invention is the provision of a novel method of inserting and attaching metal wire handles to the container carrier above described to facilitate automatic assembly of handles to container carriers.

The novel features that are characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof will best be understood by study of the following description of specific embodiments when read in connection with the accompanying drawings in which:

FIGURE 1 is an isometric perspective view, partially in section, illustrating one form of my container carrier;

FIGURE 2 is a front elevational view of the container carrier shown in FIGURE 1, there being containers inserted therein in assembled relation thereto;

FIGURE 3 is a bottom plan view of the container carrier shown in FIGURES 1 and 2;

FIGURE 4 is a view similar to FIGURE 3 showing the deformation of the container carrier after insertion of the containers therewithin;

FIGURE 5 is a sectional view along lines 5-5 of FIGURE 3, a plurality of containers being shown in nested relation;

FIGURE 6 is an isometric perspective view of a second embodiment of a container carrier;

FIGURE 6a is an isometric perspective view of a deformable plastic handle usable with the container carriers;

FIGURE 7 is an isometric perspective view of a third embodiment of a container carrier;

FIGURE 8 is an isometric perspective view of a fourth embodiment of a container carrier;

FIGURE 9 is an isometric perspective view of a fifth embodiment of a container carrier;

FIGURE 10 is an isometric perspective view of a handle usable with container carrier shown in FIGURE 11;

FIGURE 11 is an isometric perspective view of a sixth embodiment of a container carrier;

FIGURE 12 is a front elevational view of the container carrier shown in FIGURE 11, containers being shown therewithin and a handle mounted thereon;

FIGURE 13 is a bottom plan view of the container carrier shown in FIGURE 11;

FIGURE 14 is a bottom plan view similar to FIGURE 13 of the container carrier shown in FIGURES 11 to 13 after the containers have been inserted in the container carrier to illustrate the distortion of the latter;

FIGURE 15 is a view similar to FIGURE 5 showing a plurality of the type of containers shown in FIGURE 11 in a stacked nested relation;

FIGURE 16 is an isometric perspective view, a portion being in section, of still another embodiment of container carrier generally similar to that shown in FIGURE 11;

FIGURE 17 is an isometric perspective view of another embodiment of container carrier;

FIGURE 18 is an isometric perspective view of another embodiment of the container carrier;

FIGURE 19 is a front elevational view of the final configuration of a handle shown being assembled to a container carrier in FIGURE 22;

FIGURE 20 is a front elevational view of the final configuration of a handle shown being assembled to a container carrier in FIGURE 23;

FIGURE 21 is a front elevational view of the final configuration of a handle shown being assembled to a container carrier in FIGURE 24;

FIGURES 22a, 22b, and 22c are semi-diagrammatic views showing the apparatus for assembling a handle such as shown in FIGURE 19 to a container carrier and illustrating three steps in the assembly operation;

FIGURES 23a, 23b, and 23c are semi-diagrammatic views similar to FIGURES 22a, 22b, and 22c showing the apparatus and method for assembly of the handle shown in FIGURE 20;

FIGURES 24a, 24b, and 24c are views similar to FIGURES 22a-22c and 23a-23c, semi-diagrammatically showing the apparatus and method of assembly of the handle shown in FIGURE 21, to a container carrier.

While the containers and container carriers to be discussed in detail hereinafter shall be described in connection with soft drink containers or bottles, it will be obvious that the container carrier is adaptable to and susceptible of many other uses and thus the words "container," "container carrier," or "bottles" should be considered as illustrative, rather than as limiting. Turning now to FIGURES 1-5, a resilient container carrier 10, preferably made from sheet plastic materials, such as high impact polystyrene, comprises a plurality of cup-shaped pockets or members 12 (a six-pack being shown and described throughout this specification) which are interconnected adjacent the top openings thereof by integral web portions 14. The depth of the cup-shaped members 12 (dimension z as shown in FIGURES 1 and 2) is greater than the dimension of the top opening of the individual cup-shaped members and a preferred method of manufacture is the so-called plug assist and pressure

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form technique which utilizes an opposed mold and mandrel for rapid mass manufacture of the container carrier 10 from sheet stock material.

On the outer upper periphery of the carrier 10, the web portions 14 have a plurality of offset portions 16, which are downwardly deformed from the major plane of the web 14 to structurally reinforce the carrier. The web 14 is also downwardly deformed from its major plane in the center portions 18 thereof, the latter being conveniently made of a size susceptible to having a large range of sizes of central apertures 20 therein (shown in dotted lines) for receipt of any of various adaptable handle means which shall be later described.

The cup-shaped members 12 are substantially symmetrical in shape and have a generally square configuration which has a side dimension x at the top opening thereof, said dimension x preferably being substantially equal to the dimension y which is the diagonal or longest dimension adjacent the bottom of the side walls 22 of the cup-shaped members. As shown, the side walls 22 taper inwardly from the top to the bottom thereof so as to provide the required relationship between dimensions x and y , the amount of taper varying with the varying depths (dimension z) of the members 12. As shown in FIGURE 5, the taper of the side wall 22, is of a nature which permits nesting of a plurality of containers, one within the other.

What would normally be the bottom portion of the cup-shaped members 12, has been removed except for those small portions which are the inwardly extending corner lugs 26, located adjacent each of the rounded corners 24 of side walls 22. A large aperture 28, of generally cruciform shape, is thus formed in the bottom of members 12 which allows through movement of cleaning fluids when the container is to be washed and sterilized after use. Further, the large aperture permits the ready distortion of the side walls for receipt and retention of the container as shall be explained.

The containers or bottles 30, which are to be packaged in the carrier 10, are conventionally formed of glass and thus are quite rigid. The dimension x , adjacent to the top opening of the cup-shaped members 12 is preferably substantially equal to the outside diameter of the generally cylindrical containers or bottles 30 which are to be placed therewithin. (It being possible, but not as desirable to make this dimension slightly less than the outer diameter of the containers.) As shown in FIGURES 2 and 4, when the bottles 30 are inserted within the individual cup-shaped members 12, the side walls 22 are progressively distorted to receive and closely and releasably grip the container. The container 30 is prevented from passing through the cup members 12 by the stop means or lugs 26, adjacent the bottom portion of the side walls 22. The distortion of the individual side walls 22 is greatest in that portion which is located intermediate the top and bottom edge and adjacent the bottom edge thereof. The corners 24 of member 12 remain substantially undistorted. Thus, these lugs 26, which are adjacent the bottom corners and are undistorted by insertion of the container 30 serve to provide good safe retention of the containers within the cup-shaped members 12.

It will be noted that the individual cup-shaped members 12 of carrier 10 are normally originally rectilinear in configuration. In the configuration of members 12 (prior to insertion of the containers 30, as shown in FIGURE 1 and FIGURE 3), a circular line in space taken adjacent the bottom edge portion of the sidewalls 22 of the members 12 and taken so as to have a diameter dimension equal to the smallest dimension between opposed portions of the side walls 22 in this area, will have a diameter dimension that will be less than the outside diameter of the container 30 (neglecting the rounded edge of the bottom of the container). However, the largest dimension in this same plane and in the same area (the diagonal dimension y) is substantially equal to the outside

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diameter of the container 30 and said dimension y is equal to the smallest dimension between the opposed side walls surrounding the top portion of the individual cup-like members 12. These general relationships are necessary for stacking of carriers in nested relation while assuring gripping retention of the container throughout the axial length of members 12.

Carriers 10a shown in FIGURE 6, is quite similar to that shown in FIGURES 1-5, and similar parts have been identified by similar reference numerals with the suffix "a" added thereto. The carrier 10a differs over carrier 10 in that the web portion 16a and 18a are raised relative to the web portion 14a, rather than depressed. For certain containers this is desirable since it will give additional side support to the containers in the axial dimension thereof. Further, the apertures 20a are shown formed in portion 18a to receive the plastic U-shaped handle 31 (shown in FIGURE 6a) having arrowhead ends 32. The arrowhead ends 32, after mounting of the handle 31, prevent inadvertent removal of the mounted or assembled handle.

Another embodiment of the carrier is shown in FIGURE 7, and similar reference numerals shall be used throughout, with the addition of the suffix "b" for identification of similar parts. The embodiment of carrier 10b is substantially similar to that shown in FIGURE 6, except that the central web portions 18a have been formed to project a considerable distance above the plane of the major portions of web 14b, and are considerably higher than the offset of the portions 16b on the periphery. With the central web portion 18b being offset as shown in FIGURE 7, a shorter handle may be used and/or a taller container may be retained within the carrier. Also, this configuration is advantageous with so-called "waspy-waisted" bottles or the like. The design is such that nesting of stacked carrier devices is facilitated.

The embodiment shown in FIGURE 8, is substantially similar to that shown in FIGURE 6, and similar reference numerals shall be applied thereto with the addition of the suffix "c" to identify similar parts. In the embodiment shown in FIGURE 8, each of the side walls 22c of the cup-shaped members 12c have been performed so as to present an outwardly directed curvilinear pie-shaped section 32 adjacent the lower edge of the sidewalls as shown, the apex thereof pointing toward the top of the pocket 12c. The dimension between opposed portions 32, taken at the bottom edge, is slightly less than the diameter of the bottom when taken at the corners 24c adjacent the lugs 26c, so that there is slight distortion of the side wall portions 32, upon insertion of a bottle to accomplish gripping of the container when it is assembled in the cup-shaped members 12c. This form of carrier is particularly well adapted for use with heavy gauge plastics where heavy containers are contemplated and it is preferred that the amount of distortion required of the bottom portion of the carrier be minimized. This form does not allow as close nesting of stacked carriers 10c as other forms shown, though stacking and warehousing space even of these forms is saved.

Another form of the invention is shown in FIGURE 9 and the container carrier 10d shown therein shall have similar parts identified with similar reference numerals with the addition of the suffix "d." The embodiment 10d is essentially similar to the foregoing except that each of the side wall portions 22c are apertured with a triangular shaped aperture at 36 and the stop means or lugs now takes the form of a solid bottom wall 34. It will be noted that the apertures 36 are generally pie-shaped and so orientated on the side walls 22 as to afford an easy distortion thereof adjacent thereto when the container is inserted therewithin. This form 10d is also well adapted for the heavier types of containers and presents good nesting and stacking characteristics.

The embodiment of the invention shown in FIGURES 11 through 15, while having a different appearing configuration is generally similar to the foregoing embodiments

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and similar reference numerals will be applied to similar parts with the addition of the suffix "e." In the embodiment 10e, the lower portion of each of the side walls 22c of members 12c are inwardly preformed in a shallow compound curve to present a curvilinear pie-shaped section 38 and immediately thereabove are outwardly preformed (reverse) sections 40, the latter being of considerably less axial size than the former. The bottom 42 of the container carrier 10e is co-extensive with the initial configuration of members 12c and is attached to the side walls 22c only at the bottom 50 of corner portions 24e as best shown in FIGURE 14. It will be noted that the bottom 42 has a generally cruciform shape, and that the top opening of members 12e is generally square except for the corners and those midportions of the side walls where the outwardly preformed portion 40 joins the web portion 14e. The largest dimension y (near the bottom portion 42) between opposite portions of the side walls at the corner portions 50, is equivalent to the smallest dimension x between opposite side walls 22e adjacent the top opening which also bisects the longitudinal axis of the member 12e, said dimension x also being the outside diameter of the bottles 30e, which are to be contained in the individual pockets 12e. Due to the configuration of pockets 12e shown, a slightly smaller overall dimension of container carrier 10e may be used since the configuration affords a more compact unit.

Upon mounting or assembly of bottles 30e within the individual pockets 12e, the pie-shaped portions 38 move outwardly to the position shown in FIGURE 14 (said position being in substantial alignment with the outwardly preformed portions 40). In other words, the lower edge portions 44 of side wall portions 38, move completely over center and assume an almost exactly reversed position from their normal position. Since the edges 44 of the side walls are severed from the bottom portion 42, no problem with passage of cleaning fluids as the container carriers are sterilized after use is encountered.

It will be noted that the webs 14e are upset from the major plane thereof near the center web portions 18c to form handle lugs 46. The lugs 46 are conveniently pierced by through apertures 48, so that a metal wire handle 31e of the type shown in FIGURE 10 may be inserted therewithin. Further, the configuration of the container carrier 10e is such that it will afford a close nesting of a plurality of carriers as shown in FIGURE 15.

The corner portions 24e of the side walls 22e of the pocket members 12e are generally rectilinear rather than rounded, and are so dimensioned and positioned that they are not distorted at the junction 50 (between bottom 42 and some portions 24e) by the insertion of the bottles 30e and thus, no pressures are placed on said junction 50. It is important that this relationship be maintained, so that there will not be a tendency to tear the bottoms 42 relative to the side wall corner portions 24e at the relatively short neckdown portion 50 where they join.

The embodiment shown in FIGURE 16 is generally similar to the foregoing and shall be identified by similar reference numerals to the foregoing carriers with the addition of the suffix "f." The embodiment 10f is similar to embodiment 10e shown in FIGURES 10 through 15, except that the corner portions 24f are rounded and the upper opening does not have the outwardly extending preformed portion 40. The web portion 14f is offset at 16f, but the central portion 18f is generally planar with the remaining web portion 14f. A range of apertures 20f are susceptible of being formed in the center web portions 18f which may be adapted to take any of a number of handle structures. It will be noted that while the inwardly preformed pie-shaped side wall portions 38f have a greater relative axial height, they do not extend as close to the corner 24f as does the portion 38 of the carrier shown in 10e. Thus, not as large a portion of the side wall will be flexed outwardly upon the insertion of

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the bottle. This design of the carrier makes it adaptable to heavier gauges of plastic materials.

The embodiment shown in FIGURE 17, shall be identified by similar reference numerals as applied to the foregoing carriers with the addition of the suffix "g." In configuration, the embodiment shown in FIGURE 17 is most similar to that embodiment shown in FIGURE 6, except that it has been made in an open or grid-like form and most of the side wall portions have been removed and the corner lug portions have been extended across the bottom of the cup members 12g. This form of the invention is preferred when relatively light containers are to be used, or where long life and repeated use is not a necessary factor, or where economy re the amounts of plastic materials used is a dominant factor. In this embodiment 10g, the only portions which are distorted upon insertion of containers therein are the side struts 52 which will deflect outwardly as will be apparent.

The embodiment shown in FIGURE 18 is generally similar to that shown in FIGURE 17, and similar parts will be identified with similar reference numerals with the addition of the suffix "h." In essence, the essential distinction of the embodiment shown in FIGURE 18 is the addition of the integrally formed handle means 54. The handle means 54 is actually an extension of the web means which is formed into a closed loop. The sides of the handle means 54 converge at an angle equal to or at a slightly greater angle than the taper of the pockets 12h. All other relationships are similar to that embodiment shown in FIGURE 17.

As aforesated, handle means of various types are adapted to be employed with the carriers discussed. The exact type of handle means is somewhat dependent upon the nature of the container to be carried within the carrier. Also, a major consideration is "when" the handle is to be attached to the carrier. If it is to be attached by the retailer, just prior to sale to consumer, then the handle 31 of the general type shown in FIGURE 6a has definite advantages since it is easily applied by hand to most of the carriers under consideration. As aforesated, the handle 31 comprises a generally one piece U-shaped member formed of plastic with a pair of barbed heads at the terminal portions of the U. The U-shaped body may or may not be preformed (as shown) to assure said handle after mounting to lay flat after its assembly to the carrier.

Whether the handle is to be inserted at the time of manufacture of the carriers, or at the time of assembling of the carrier with the containers, the type shown in FIGURE 10 or in FIGURES 19 through 21 may be conveniently used. It will be noted that the handle shown in FIGS. 19-21 is generally U-shaped with a pair of generally transversely extending finger portions, as will be explained in detail below, said finger portions adapted to engage generally opposing areas of the container carrier immediately adjacent the spaced apertures to prevent withdrawal of the handle from the carrier.

The handle 60 shown in FIGURE 19, is preferably made of metal wire and is adapted to be applied by automatic machinery as shown in FIGURES 22a, b and c. Initially, the handle 60 has a base portion 62, and spaced parallel arms 64 and 66. The free ends 70 of the arms 64 and 66 are preformed prior to assembly into the first position as shown in FIGURE 22, said preform shape having a first portion 68, which is offset from the free end portion 70, said first portion 68 being generally parallel with the base portion 62 (as shown in the upper portion of FIGURES 22a, b, and c). The second portions 70 are preferably angularly bent inwardly relative to the major axis of the free arms 64 and 66, being offset less than 90° relative to the first portion 68. The angular offset of portion 70 of the deformable end of the handle 60 must not be so great as to prevent entrance into the aperture 20 which are spaced a predetermined distance in the carrier 10. Preferably the free end of the portion 70 is aligned with the major axes of the arm portions 64 and

66 respectively. It will be seen that as the handle 60 is moved downwardly relative to the carrier, the free ends of portions 70 will tend to cam the arms 64 and 66 such that the wire handle arms 64-66 will conveniently pass into the carrier aperture.

Rather simple automatic machinery can deform the end portions 70, as shown in FIGURES 22a, b, and c. Specifically, an upper moveable clamp member 72 has an elongated groove which is adapted to move the handle 60 through the apertures 20 in the carrier, there being side guide members 74 and 76, which are adapted to prevent distortion of the handle in the transverse plane. A lower mandrel 78 is formed with a groove therein to engage the free end of portion 60, causing the latter to be deformed until it is parallel with arm portion 68, and base portion 62 as shown in FIGURE 22c. The end portion 70 in this position is of sufficient dimension and so orientated that it prevents passage thereof through the apertures 20.

Still another embodiment of a handle 80 is shown being assembled in FIGURES 23a, b, and c, with a carrier 10 (shown in semi-diagrammatic form). The U-shaped handle means 80 presents a pair of spaced legs, each of which are grooved or nicked at 86. Each of the end portions 82 are doubled back upon themselves to form a handle configured as shown in FIGURE 20. The end portion below the groove or nick 86 and in axial alignment with the two spaced arms are denominated with the reference numeral 82 and the reversely bent end portion are denominated with the reference number 84. As shown, the end portions 82 and 84 are adapted to be engaged by a plurality of anvils 88-89, while being held apart above the nick or groove 86 by a spacer member 90. The anvils cause the end portion 82 and 84 to be deformed to a configuration whereby portions 82 and 84 assume a substantially parallel relation with the bight portion of the U-shaped handle. The spacer 90 and the anvils 88-89 are then removed and retraction of the handle from finally mounted position is prevented by the upset end portions 82 and 84.

Another embodiment of a U-shaped handle means 92 is shown in FIGURE 21, and in FIGURES 24a, b, and c. The end portions of a U-shaped handle are provided with slots or slits 94 on each of the arms, said slots being substantially parallel to each other. When the U-shaped handle is inserted through the carrier sheet 10, (shown semi-diagrammatically), the slotted ends of the arms engage a first anvil member 100 which is adapted to separate opposite sides of the portions of the split end to cause them to bend divergently of the two portions 96 and 98 of each arm. Thereafter, a secondary anvil surface causes the two portions to be finally deformed to a position generally parallel with the base of the handle portion. These deformed portions prevent ready removal of the handle from the carrier, and mounted thereon. It will be noted that a series of stepped anvils such as 102 may be employed to progressively cause flattening out of the portions 96 and 98.

While I have shown and described various embodiments of my invention, it is with full awareness that many modifications thereof are possible. The invention, therefore, is not to be limited except by the prior art and by the spirit of the attached claims.

What is claimed as the invention is:

1. In combination, a container carrier having a relatively thin web portion, said web portion defining spaced apertures of predetermined size, and initially generally U-shaped handle means having a base portion and a pair of generally parallel leg means extending therefrom, each of said leg means having transversely deformable end portions adapted to be upset after insertion in said apertures, the transversely deformable end portions on each of said leg means having first and second parallel portions joined at the terminal end thereof, and groove means formed in said first portion at a position intermediate the length of said second portion, said groove means providing a prestressed portion for quick deformation of said second portion and a part of said first portion as a unit to a position parallel with said base portion to present at least a pair of transversely extending finger portions on each leg means for underlying generally opposed areas immediately adjacent each aperture of the web portion to prevent withdrawal of said leg means therefrom.

2. The method of attaching a U-shaped metallic handle having generally parallel leg means with transversely deformable end portions to a container carrier having spaced apertures therein, comprising moving the end portions of said leg means through said spaced apertures, and simultaneously forming at least a pair of transversely extending finger portions on each leg means for underlying generally opposed areas immediately adjacent each aperture of the container carrier by upsetting the transversely deformable end portions of said leg means.

3. The method set forth in claim 2 wherein said end portions are upset by an anvil means positioned beneath said container carrier.

4. The method as set forth in claim 2 including the step of holding said U-shaped handle including said leg means in a substantially fixed position after insertion through the spaced apertures of said container carrier.

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